

The VESALIUS* Project: Visualization of Bronchial Tree Anatomy Lesson

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Stevens Institute of Technology and the Columbia University College of Physicians and Surgeons (P & S) have been working together for the past year to define and design an application to supplement anatomy curriculum with 3D teaching tools. The Vesalius Project derives its name from Vesalius 15th century anatomy work. It is our goal to bring Vesalius into the 21st Century.

For a number years, students have been supplementing their school studies with the use of computers and various services available on the Internet. This project intends to deliver a hardware independent, interactive electronic curriculum based on the Visible Human data using the Internet as the delivery mechanism. We demonstrate a visual anatomy lesson of the Bronchial Tree with Lung regions used as reference spatial structures.

Evaluation of the educational requirements was conducted with the P & S personnel in the Office of Scholarly Resources and Department of Medical Informatics. An outline was developed identifying three (3) individual phases: Preprocessing requirements to "extract" the data

from flat 2D images to a 3D representation; Defining anatomical labeling knowledge-base requirements and links to 3D images, and finally, Designing the software. A sample software display screen was created to accommodate students' visual and textual search criteria.

The P & S personnel indicated the necessity to build certain functions into the software to accommodate required curriculum at Columbia. Functionality includes a 3D pointer in the Anatomical Graphical Window for visual exploration, Scroll Bar pointer in the Anatomical Textual Window for textual exploration, interconnections to the anatomical knowledge-base from the graphical window, and a peel away browser.

This VRML-like (Virtual Reality Modeling Language) system has been designed to run on common computer and operating system platforms. The documents and other image information will reside on a web server due to storage requirements.

Our experience through research and development of the VESALIUS Project demonstrates that the World Wide Web technology in conjunction with the Visible Human data set provide a strong base for electronic curriculum.

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